BECOMING AN ELITE ANESTHESIA PROVIDER

From Anesthesiology Update 2013, presented by the University of California, San Diego, School of Medicine, Department of Anesthesiology

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Reasons for becoming elite expert: delivery of optimal care to patients; provision of good service to other health care providers; facilitation of practice of anesthesiology, with minimization of risk; increased personal satisfaction; increased job security and marketability; continuous improvement in performance and maintenance of skills

Qualities of experts: heightened perception, particularly in workplace environment; strong cognitive strengths (brain power) and motor skills necessary for job; perceptual advantages increase situational awareness (enhance ability to recognize cues from situation, interpret information, and respond quickly); cognitive strengths allow individual to draw from large body of specialty-related information, synthesized with observation, and apply appropriate principles; problem-solving abilities and aptitude for making right response at right time (may seem intuitive); efficiency and economy of motion (actions should appear smooth, effortless, and well organized)

Expertise in anesthesia: situational awareness — imperative for early recognition of problems, anticipation of trouble, and quick response to critical events; cognitive skills — allow evaluation of patients preoperatively, discussion of cases with surgeon and other consultants, and planning and conducting anesthetics; motor skills — include performance of physical examinations, use of equipment and technology, and performance of procedures; Ericsson — experts consistently exhibit superior performance; perform consistent smooth anesthetics, respond to environment, and improve difficult situations; additionally, experts always set goals and develop continuous plans for career improvement

Identification of experts: easily quantified in sports with tracking of performance statistics (eg, batting averages, win-loss percentages), within general context of “level and controlled playing field” (eg, constant size of baseball diamond); quantitative measures more difficult to establish in health care field (controlled environment not possible; confounders influence outcome beyond responses of individual providers); popular culture still assesses performance through grades, reputation, board scores, diplomas, and “top doctor” lists; subjective measures may not correlate with performance in real situations or potential outcomes

Grades: skill in written examinations does not predict strong performance under pressure

Attitude: public expects experts to dress appropriately and show confidence; meeting expectations important, but good clothes and “talking the talk” do not guarantee expertise (eg, in movie “Catch Me If You Can” about con artist Frank Abagnale, Abagnale successfully impersonates navigator for Pan American Airlines by pretending to have appropriate skill set and wearing counterfeit flight uniform)

Credentials: public prefers that physicians have diplomas from prestigious institutions and board certifications, but credentials do not equate with good performance; public expects expertise from older providers and those with more experience, but experience does not necessarily equate with expertise; The Peter Principle — originally published in 1969 (with rerelease in 2009); proposes that most people promoted in organizations on basis of achievement or level of success; effective until individual promoted to level at which he or she becomes “stuck” in job beyond capabilities (no longer promoted because of poor performance, but unlikely to be demoted); ie, people rise to level of own incompetence; additional problems related to promotion and tenure — added responsibility (eg, administrative duties, committee assignments, meetings, increased research obligations) often required; these limit time in work environment and cause skills to suffer; remaining current with technologic advances easier for individuals in training programs or recently graduated; difficulty in remaining current increases with time away from training program; skills begin to deteriorate with advancing age; obstetric patients may insist attending physician place epidural, when resident who performs ≈100 epidurals in 3- to 4-wk timeframe has greater expertise

Educational Objectives

The goal of this program is to encourage the attainment of expert skills by anesthesia providers. After hearing and assimilating this program, the clinician will be better able to:

1. List qualities that are associated with expertise.
2. Dispel commonly held misconceptions about indicators of expertise (eg, diplomas, board scores).
3. Differentiate between requirements for achieving expert performance and those for mastery of everyday skills.
4. Explain deliberate practice and its place in the practice of anesthesia.
5. Identify resources that can be used by anesthesia providers in private practice for expanding skill sets.

Faculty Disclosure

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Cultural norms: 1978 study of family medicine physicians compared those nominated best in region with those not nominated; both groups asked to assess standard cases (eg, differential diagnosis, workup, therapy, treatment plan); objective scores similar in 2 groups; reputation and experience poor gauges of expertise (better judged with tests)

Obtaining elite status: nature vs nurture — in 350 BC, Plato opined that all ability innate and level of achievement predetermined; Aristotle proposed that all humans born with “blank slate,” and that talent can be developed; Bloom — evaluated early lives of 120 immensely talented individuals to characterize their early training; found that they attained elite expert status with hard work, supportive families, and outstanding teachers; other research — shows ordinary college students can learn to memorize long sequences of numbers and retain information; healthy, nonathlete adults can train and perform thousands of push-ups in one setting; training and experience can improve ability, but amount and style of training important

Learning curves: individuals who progress to become experts show dramatic rise in performance when training initiated, and level of performance continues to improve for long periods of time; people who do not achieve elite level show initial improvement, but level of performance plateaus despite continued training and practice; reaching plateau common in performance of everyday skills; top professional athletes or clinicians in complex medical skills (eg, cardiothoracic surgery, anesthesia) considered individuals with expert performance; “arrested development curve” illustrates, eg, performance of people involved in recreational sports, everyday skills (eg, driving to work, jogging, tying shoes); different levels of effort required to reach expert level for different skills; expert performance requires ≥10,000 hr of intense practice, while for everyday skills, only 50 hr of practice required to achieve satisfactory performance (200-fold difference)

Practice styles: “deliberate practice” required for elite performance; individuals whose skills plateau perform job without special effort for improvement; anesthesia residents work approximately 60 hr/wk, 45 wk/yr, for 3 yr, for total of 8100 hr, and thus do not reach 10,000 hr minimum for achieving expertise; many of those hours nonproductive (include, eg, breaks, time spent outside operating room, routine cases that do not add to skills); residency achieves level of journeyman (ie, able to perform job), but continued improvement expected; best estimates indicate 10 to 15 yr required to achieve expert status; for tasks learned in childhood (eg, playing piano, golf), expert level can be attained when individual in early 20s; anesthesia residents begin training in mid-20s and do not reach expert level until early to mid-40s; age-related decline becomes steeper with time

Deliberate practice: repetitive practice of specific task with specific goal; feedback during performance of task important; motivation to improve required; process repeated with progressively more difficult tasks; goal to improve and maintain necessary skills; allows for systematic coverage of all skills required for expertise in chosen profession, without waiting for occurrence in everyday work (mastery learning training)

Examples: mastery of ultrasound (US)-guided venous cannulation — begins with large superficial veins (easily visualized); direct feedback provided by US visualization of cannula in vein, along with blood return; after mastery of initial technique, individual can advance to smaller and deeper veins; others — piano exercises written for deliberate practice and development of technique; deliberate practice of fielding of ground balls of different speeds and angles by baseball players; mastery of intubation begins with practice on mannequins, then progresses to situations with increasing difficulty (eg, limitation of cervical spine mobility, obstruction of larynx, use of bougies); training model for fiberoptic intubation requires trainee to sequentially aim for targets that progressively increase in difficulty

Benefits of deliberate practice: helps maintain performance in spite of advancing age; study — compared ability to play piano in amateurs vs experts; found decline in reaction time and general measures of ability with increasing age in both groups, but performance of experts maintained if they engaged in deliberate practice; anesthesia — studies evaluating anesthesia-specific procedures found deliberate practice speeds rate at which residents learn techniques, helps maintain skills for longer duration, and leads to better outcomes

Application to career: easier to achieve in academic environment, in which experts available to give feedback, and motivation to learn new techniques provided; mindset that encourages experimentation with new techniques inherent in academia; in private practice, incorporation of deliberate practice requires conscientious selection of goals and plan for improvement program; knowledge-based tasks — more straightforward; independent study possible (eg, concentration on unfamiliar topics in textbooks, journals, online, and at meetings; perceptual reasoning skills — easily incorporated into private practice with attendance of grand rounds, making case presentations, and interactions at morbidity and mortality conferences (eg, volunteer during discussions and receive feedback)

Problem-based learning: exercises available for independent study or at meetings; speaker recommends use of simulators (offer close to real-life situations and opportunities to use management and reasoning skills without risk of life); recommended resources — book authored by Yao and Artusio (among others); online exercises from American Society of Anesthesiologists; meetings that offer small groups with problem-based learning

Expanding skill sets: eg, learning new procedures, using new monitors, trying new drugs, studying and requesting cases that offer learning opportunities; learning new procedures difficult (requires simulation courses, workshops, or task trainers to avoid experimenting on live patients); experts continually seek new applications for skills and equipment; direction and feedback — star performers use coaches who teach and evaluate performance, identify weaknesses, find areas for improvement, give feedback on areas requiring work, and provide motivation for hard work; speaker’s institution has mentorship program (mentors assist academic advancement, but also useful in general anesthesia and education skills); if no mentorship program
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Estimated time to complete the educational process:

- Review Educational Objectives on page 1
- Take pretest
- Listen to audio program
- Review written summary and suggested readings
- Take posttest

- 5 minutes
- 10 minutes
- 60 minutes
- 35 minutes
- 10 minutes

Review written summary and suggested readings 35 minutes

Take posttest 10 minutes
1. An elite expert exhibits which of the following characteristics?
   (A) Makes decisions strictly by instinct
   (B) Polls other providers before taking action
   (C) Shows strong situational awareness
   (D) Makes slow, deliberate responses to situational changes

2. An expert in anesthesiology is easily identified by reviewing grades, reputation, board scores, diplomas, and “top doctor” lists.
   (A) True
   (B) False

3. The Peter Principle proposes which of the following theories?
   (A) People rise to the level of their own incompetence
   (B) People should be demoted when unable to adequately perform
   (C) Expertise is best gained when individuals are promoted rapidly
   (D) People with arrested development feel resentful when an expert is promoted

4. Keeping skills current is more difficult for clinicians in all the following situations, except:
   (A) Administrative duties are added to other responsibilities
   (B) Assignments to multiple committees are accepted
   (C) Residency program has not yet been completed
   (D) Research obligations are among responsibilities

5. Which of the following characteristics is shared by individuals who have achieved elite expert status?
   (A) Innate skill, requiring little practice
   (B) Independence
   (C) Self-taught
   (D) Supportive family

6. Individuals with “arrested development” (i.e., plateaued skills) are those who have abandoned continued training and practice.
   (A) True
   (B) False

7. How many hours of practice are required to achieve an expert level of performance?
   (A) ≥50
   (B) ≥100
   (C) ≥1000
   (D) ≥10,000

8. Best estimates suggest that, after achieving a satisfactory level of job performance, an additional ______ are required to attain expert status.
   (A) 3 to 5 yr
   (B) 5 to 10 yr
   (C) 12 to 15 yr
   (D) 16 to 20 yr

9. Deliberate practice is defined by which of the following?
   (A) Repetitive practice on specific task with specific goal
   (B) Breaking tasks down into simple, easy steps
   (C) Establishing algorithms to minimize error
   (D) Repeating skills that have already been mastered to ensure retention

10. In general, it is easier to apply deliberate practice to one’s career in ______; use of a simulator to practice skills is an example of ______.
    (A) An academic environment; a knowledge-based task
    (B) Private practice; a knowledge-based task
    (C) An academic environment; problem-based learning
    (D) Private practice; problem-based learning